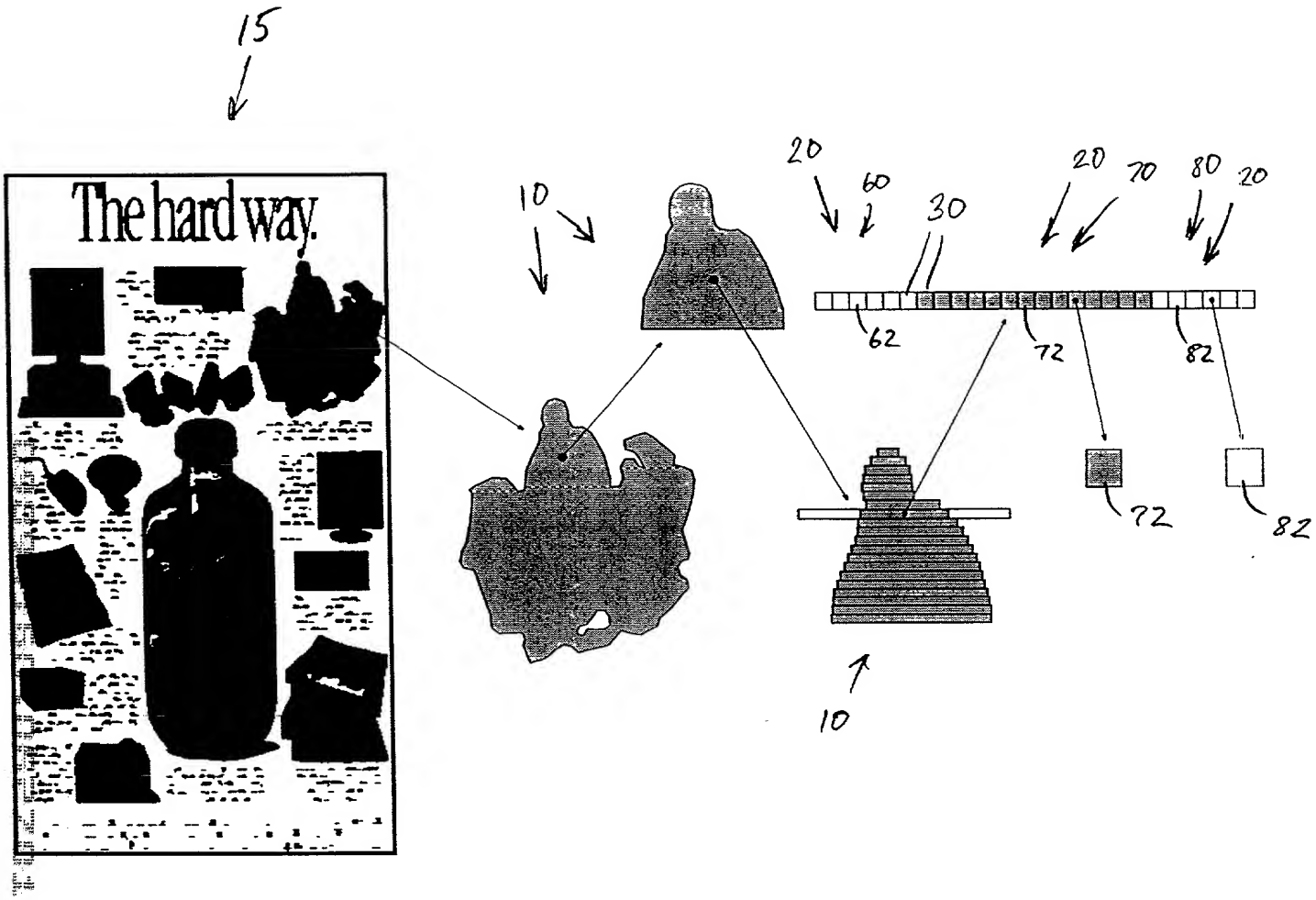


FIGURE 1

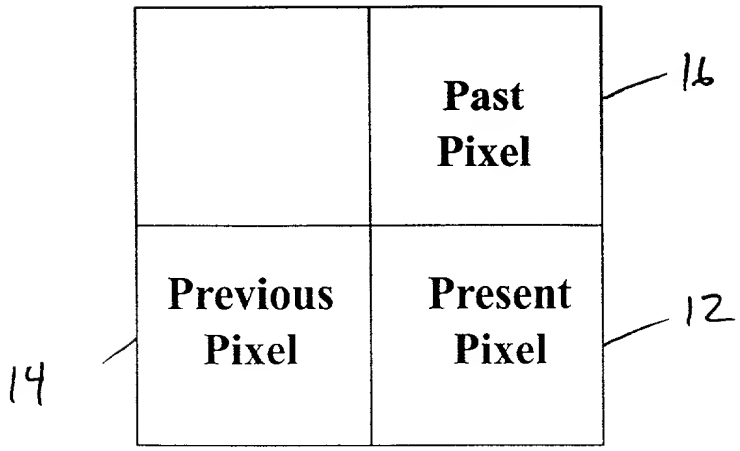


FIGURE 2

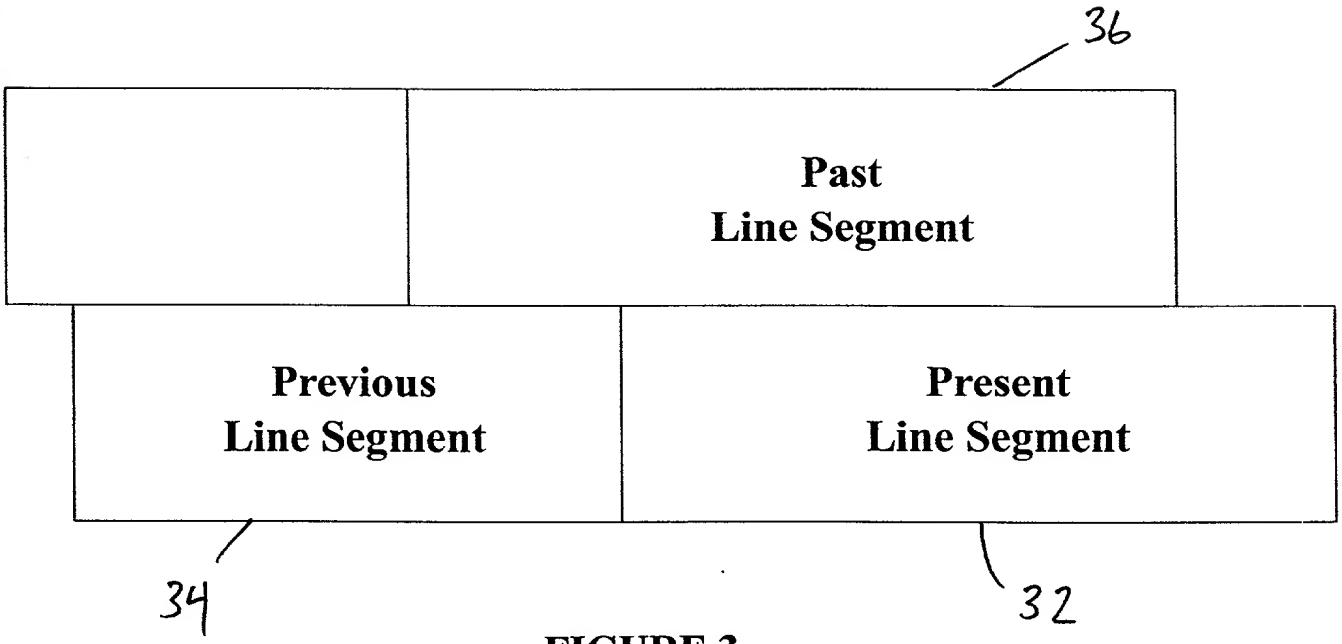


FIGURE 3

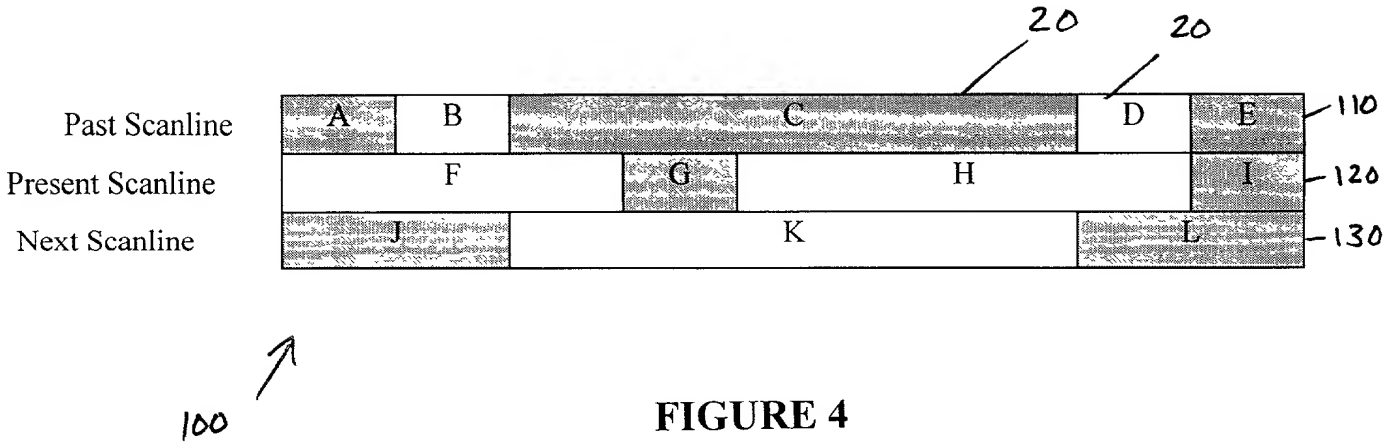

20
20
Past Scanline
A
B
C
D
E
110
Present Scanline
F
G
H
I
120
Next Scanline
J
K
L
130
100

FIGURE 4

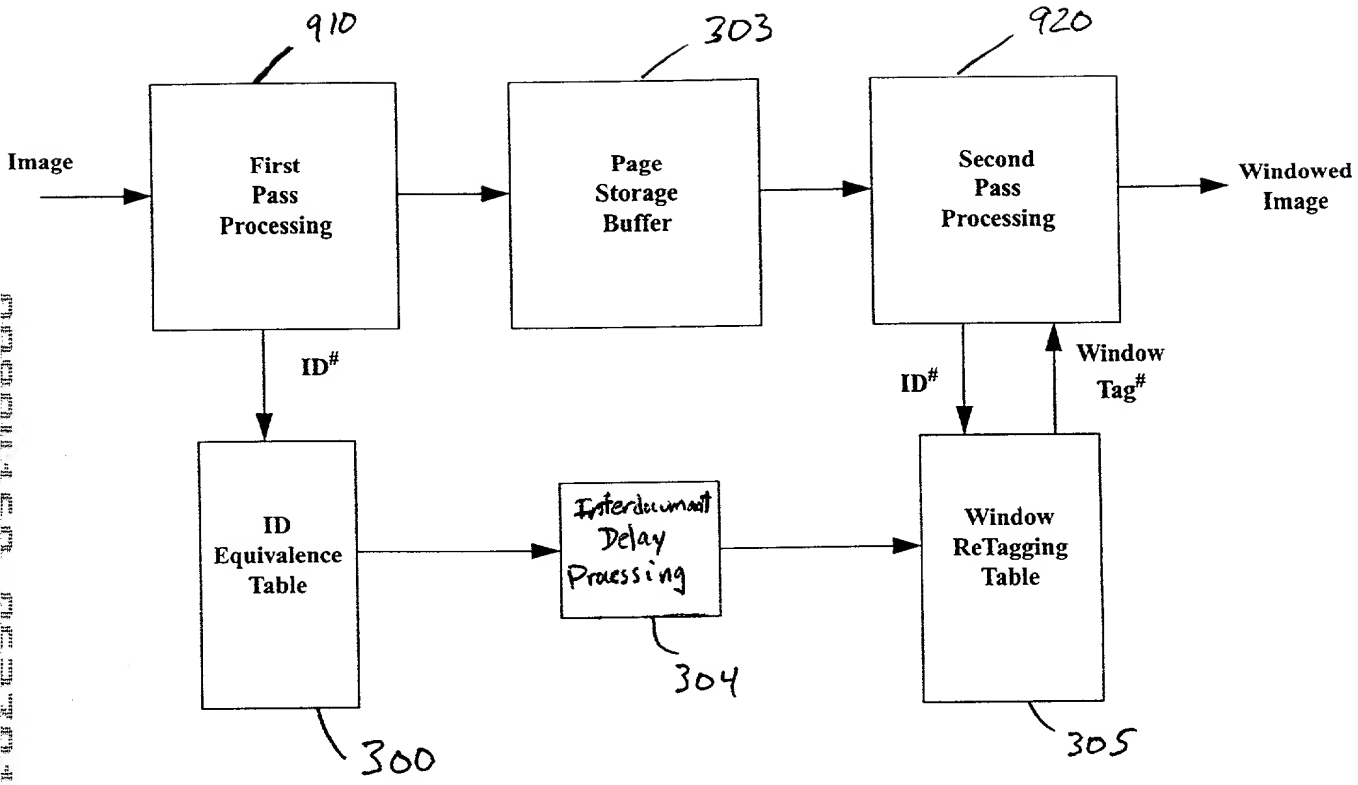

910
303
920
Image
First Pass Processing
Page Storage Buffer
Second Pass Processing
Windowed Image
ID#
ID#
Window Tag#
ID Equivalence Table
Interdocument Delay Processing
Window ReTagging Table
304
300
305

FIGURE 5

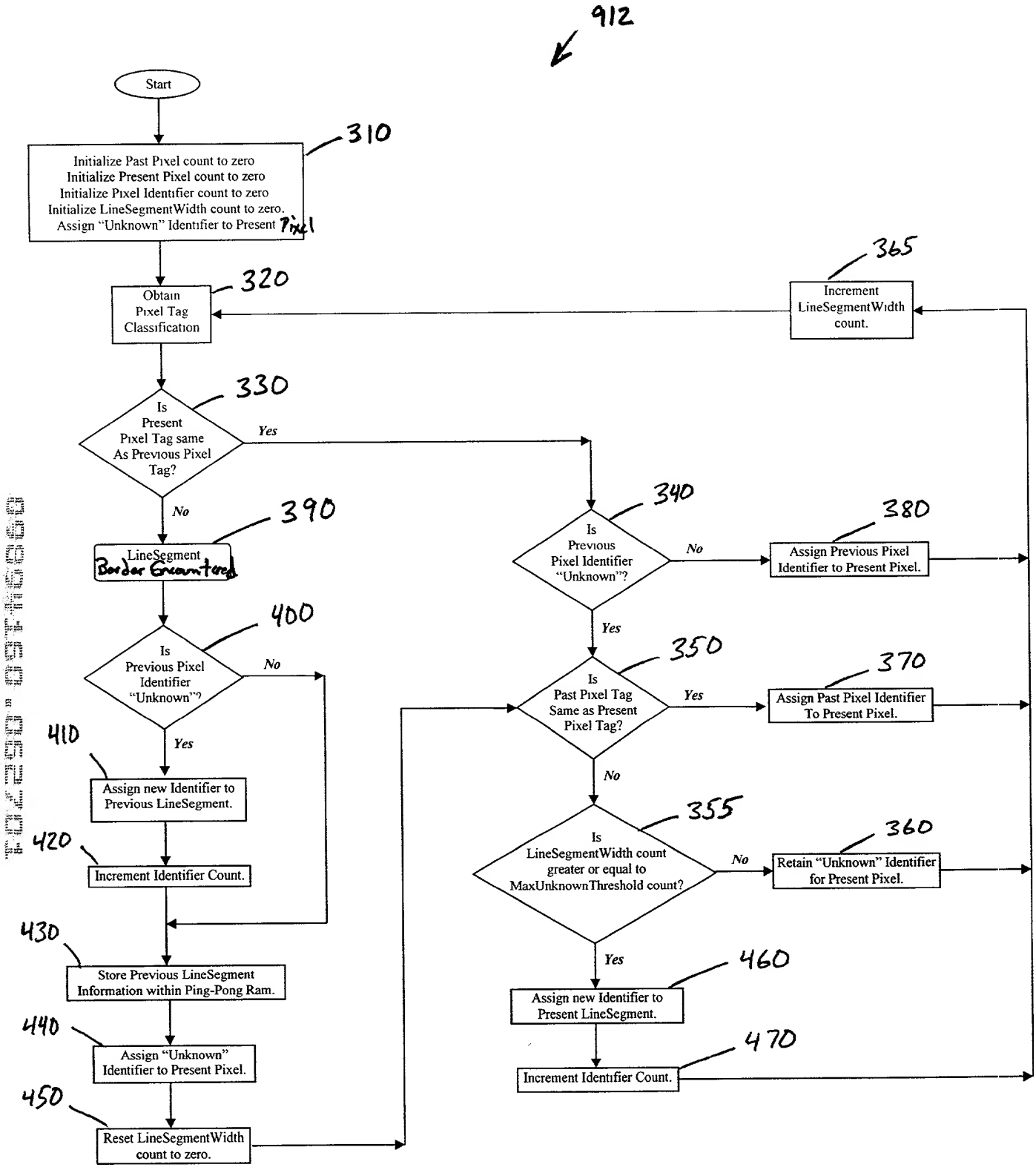

912
Start
310
Initialize Past Pixel count to zero
Initialize Present Pixel count to zero
Initialize Pixel Identifier count to zero
Initialize LineSegmentWidth count to zero.
Assign "Unknown" Identifier to Present Pixel
320
Obtain Pixel Tag Classification
330
Is Present Pixel Tag same As Previous Pixel Tag?
Yes
No
390
LineSegment Border Encountered
400
Is Previous Pixel Identifier "Unknown"?
No
Yes
410
Assign new Identifier to Previous LineSegment.
420
Increment Identifier Count.
430
Store Previous LineSegment Information within Ping-Pong Ram.
440
Assign "Unknown" Identifier to Present Pixel.
450
Reset LineSegmentWidth count to zero.
340
Is Previous Pixel Identifier "Unknown"?
No
Yes
380
Assign Previous Pixel Identifier to Present Pixel.
350
Is Past Pixel Tag Same as Present Pixel Tag?
Yes
No
370
Assign Past Pixel Identifier To Present Pixel.
355
Is LineSegmentWidth count greater or equal to MaxUnknownThreshold count?
No
Yes
360
Retain "Unknown" Identifier for Present Pixel.
460
Assign new Identifier to Present LineSegment.
470
Increment Identifier Count.
365
Increment LineSegmentWidth count.

FIGURE 6

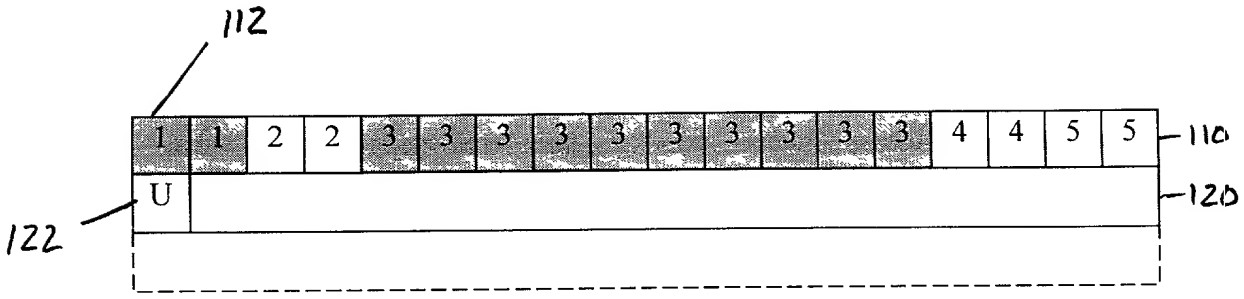


FIGURE 7A

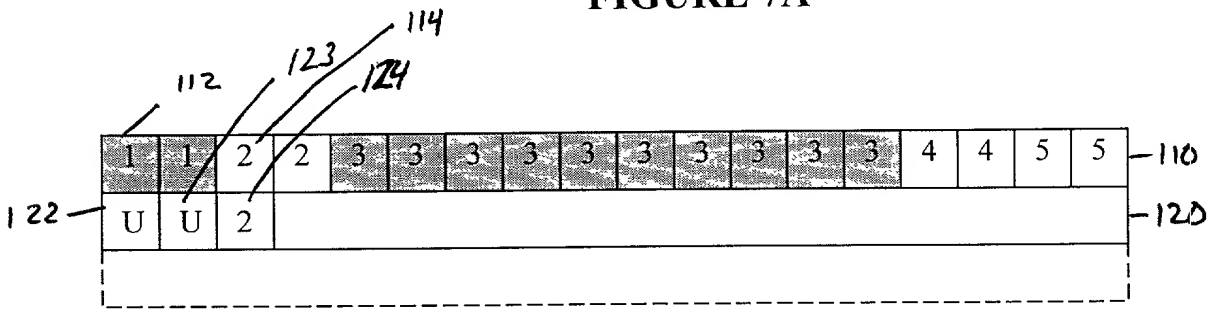


FIGURE 7B

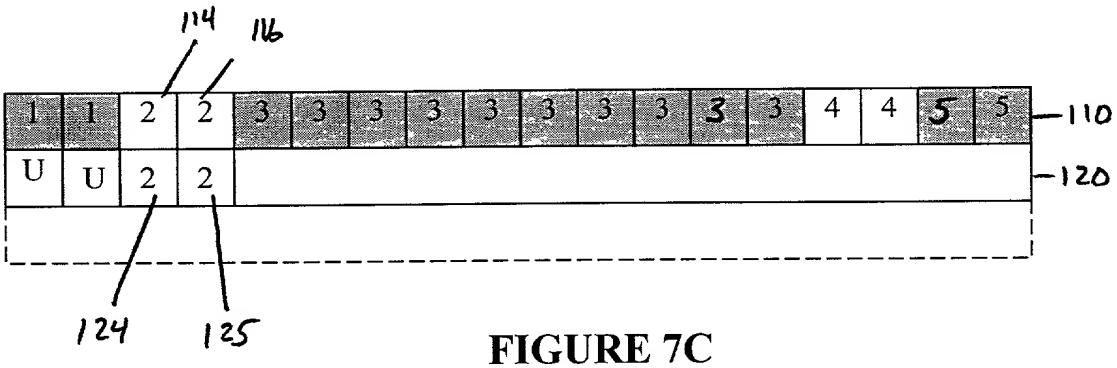


FIGURE 7C

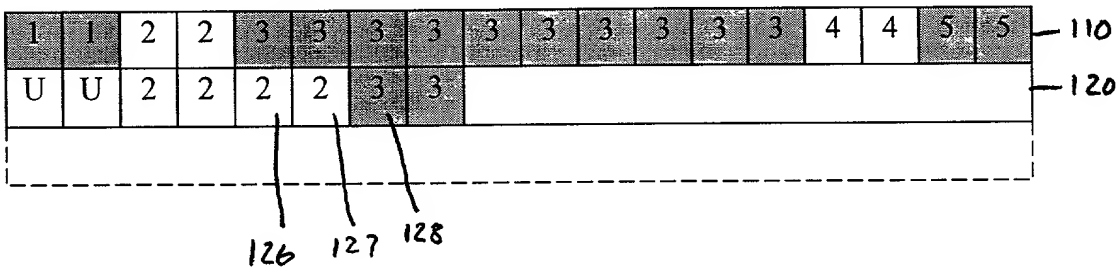


FIGURE 7D

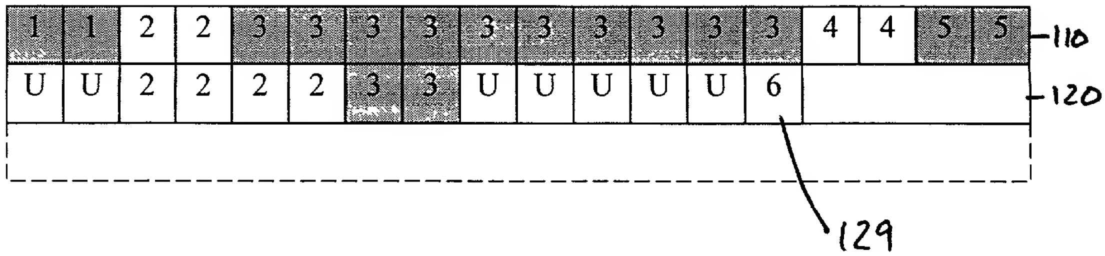


FIGURE 7E

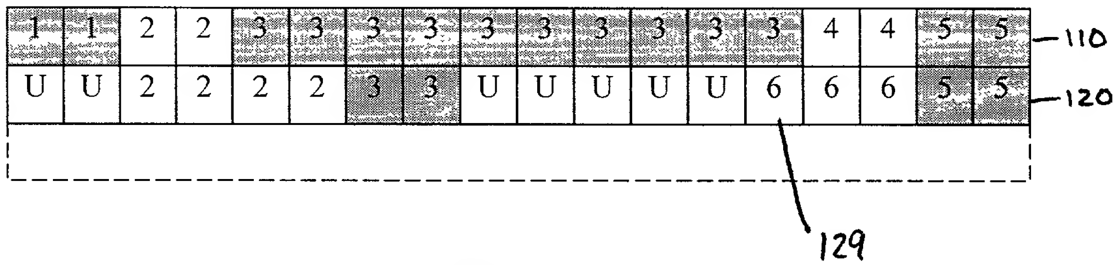
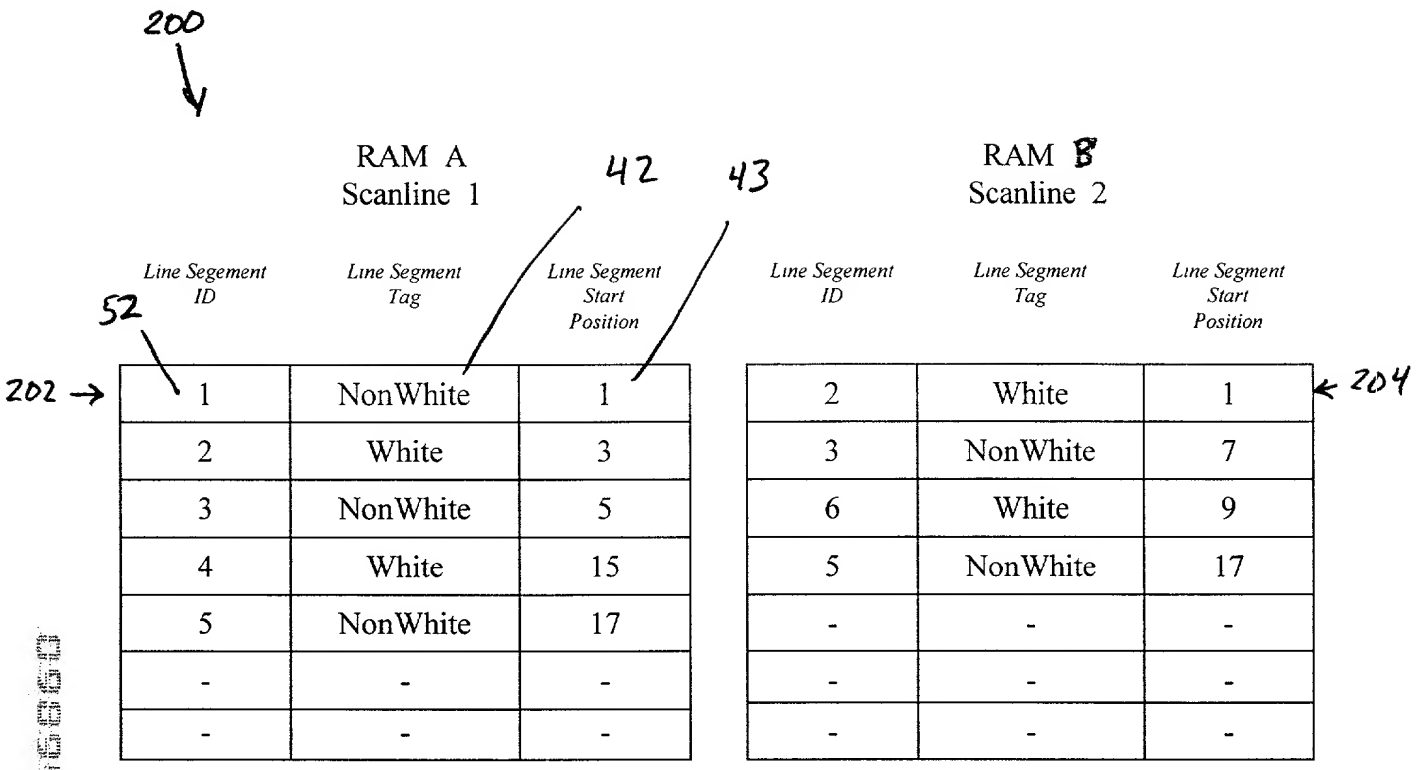


FIGURE 7F



Line Segement ID	Line Segment Tag	Line Segment Start Position
1	NonWhite	1
2	White	3
3	NonWhite	5
4	White	15
5	NonWhite	17
-	-	-
-	-	-

Line Segement ID	Line Segment Tag	Line Segment Start Position
2	White	1
3	NonWhite	7
6	White	9
5	NonWhite	17
-	-	-
-	-	-
-	-	-

FIGURE 8

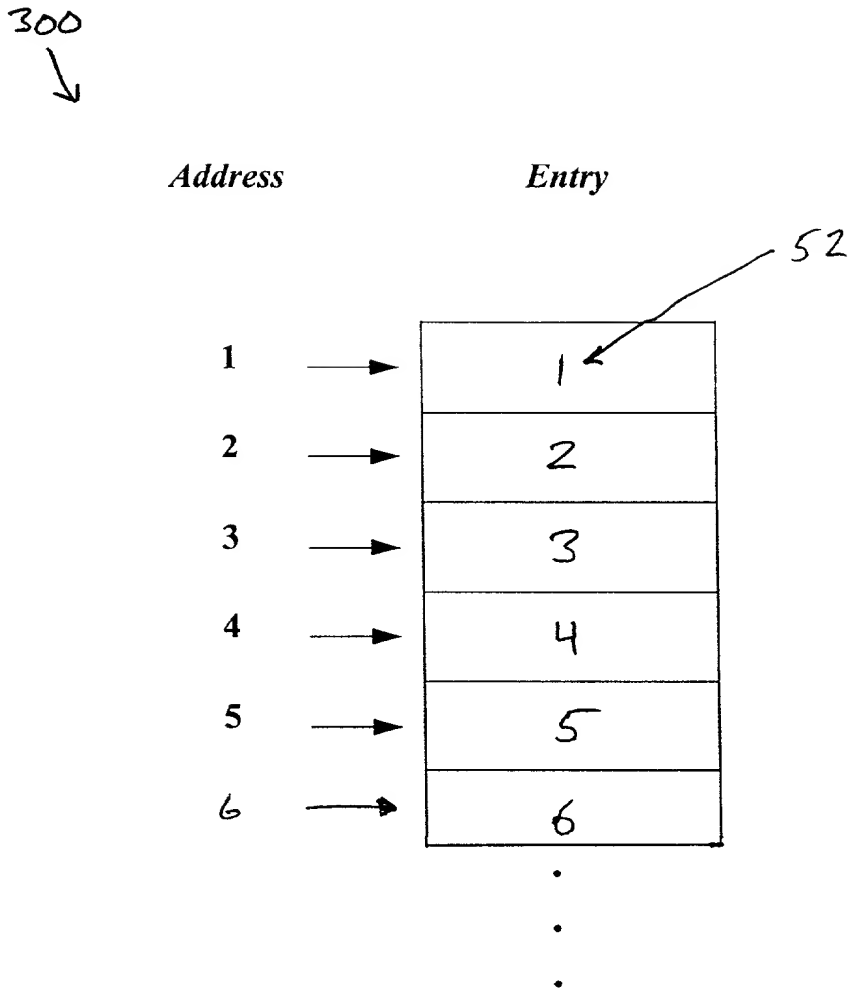


FIGURE 9

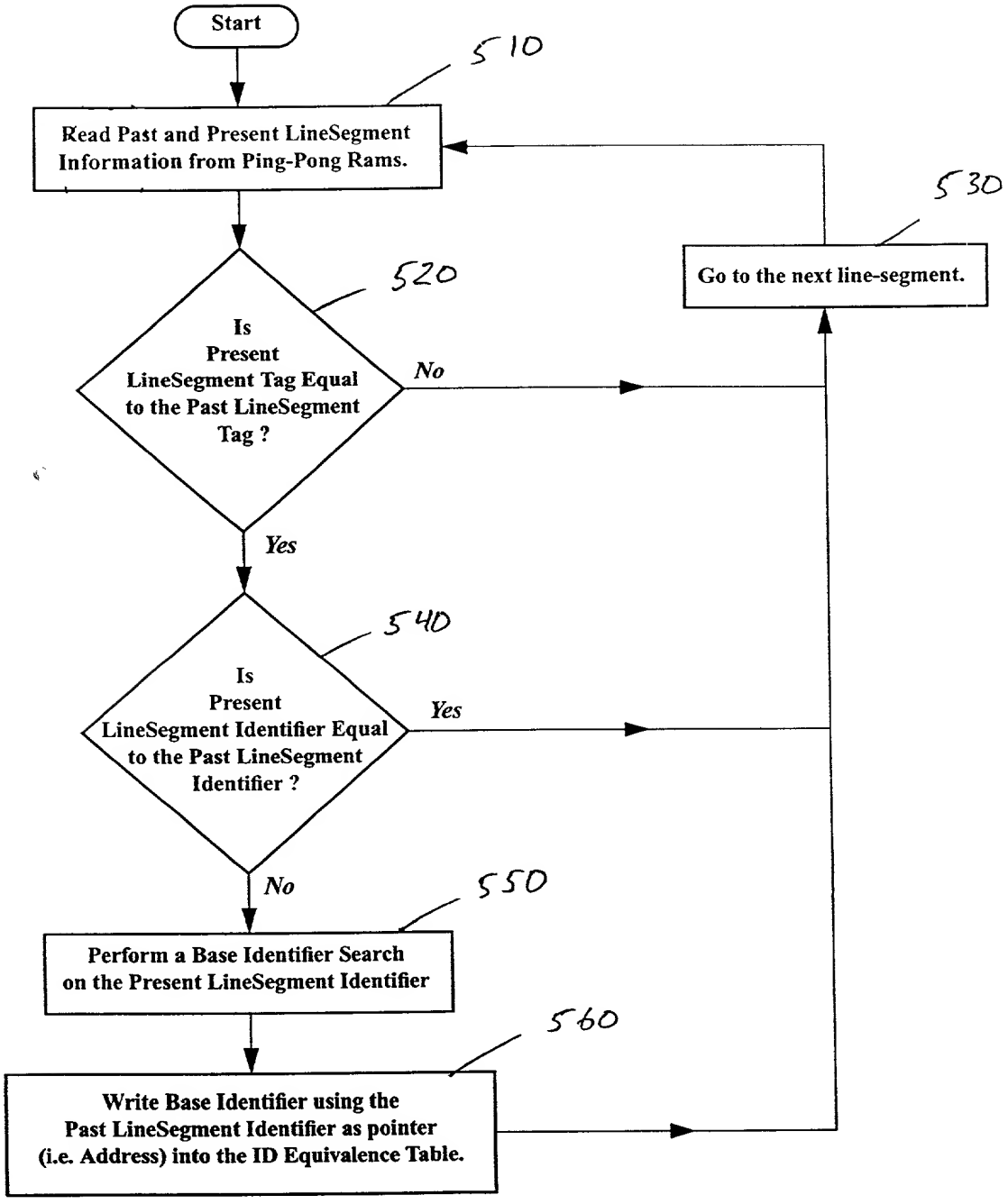

Start
510
Read Past and Present LineSegment Information from Ping-Pong Rams.
520
Is Present LineSegment Tag Equal to the Past LineSegment Tag ?
No
Yes
540
Is Present LineSegment Identifier Equal to the Past LineSegment Identifier ?
Yes
No
550
Perform a Base Identifier Search on the Present LineSegment Identifier
560
Write Base Identifier using the Past LineSegment Identifier as pointer (i.e. Address) into the ID Equivalence Table.
530
Go to the next line-segment.

FIGURE 10

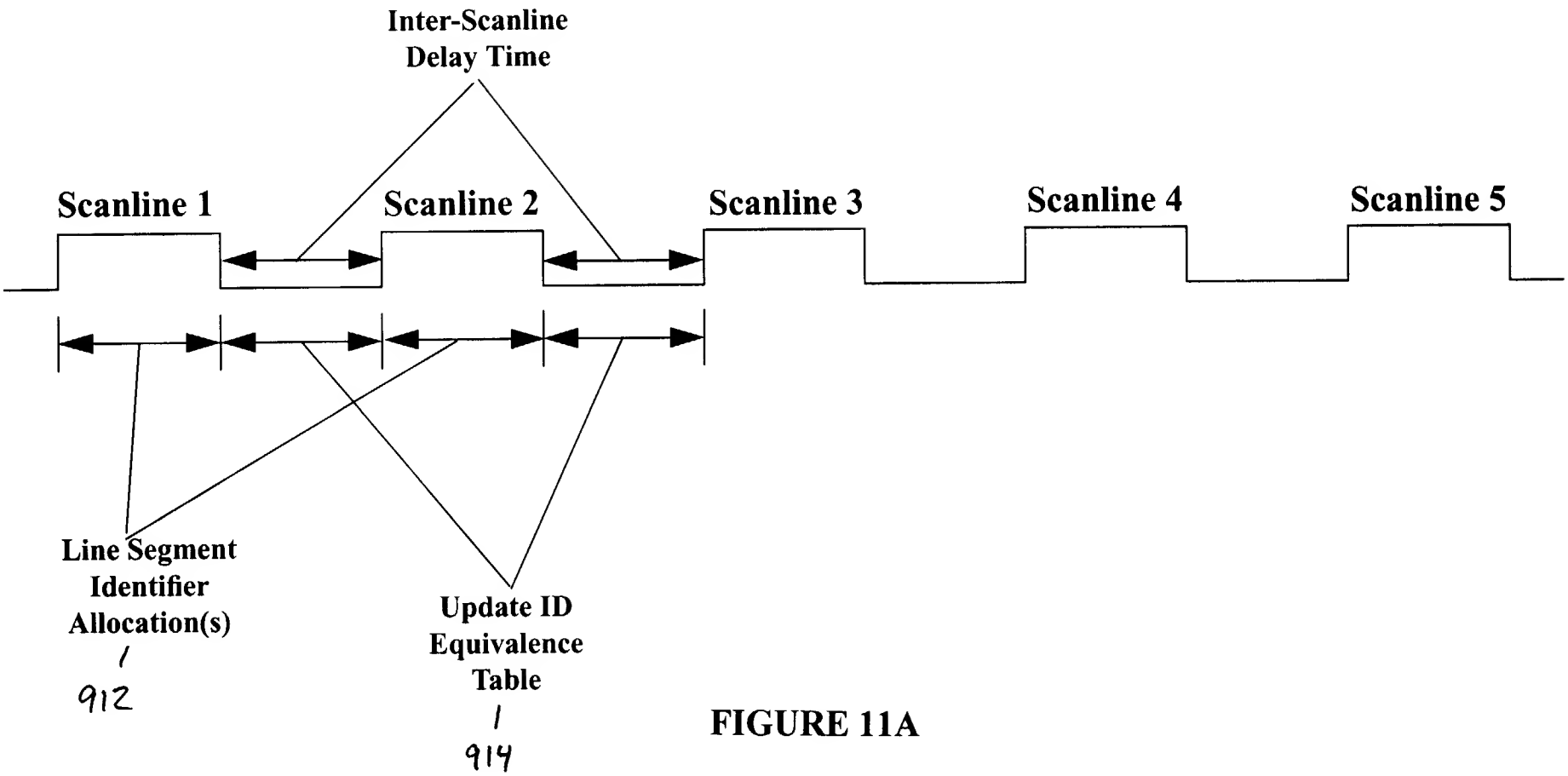


FIGURE 11A

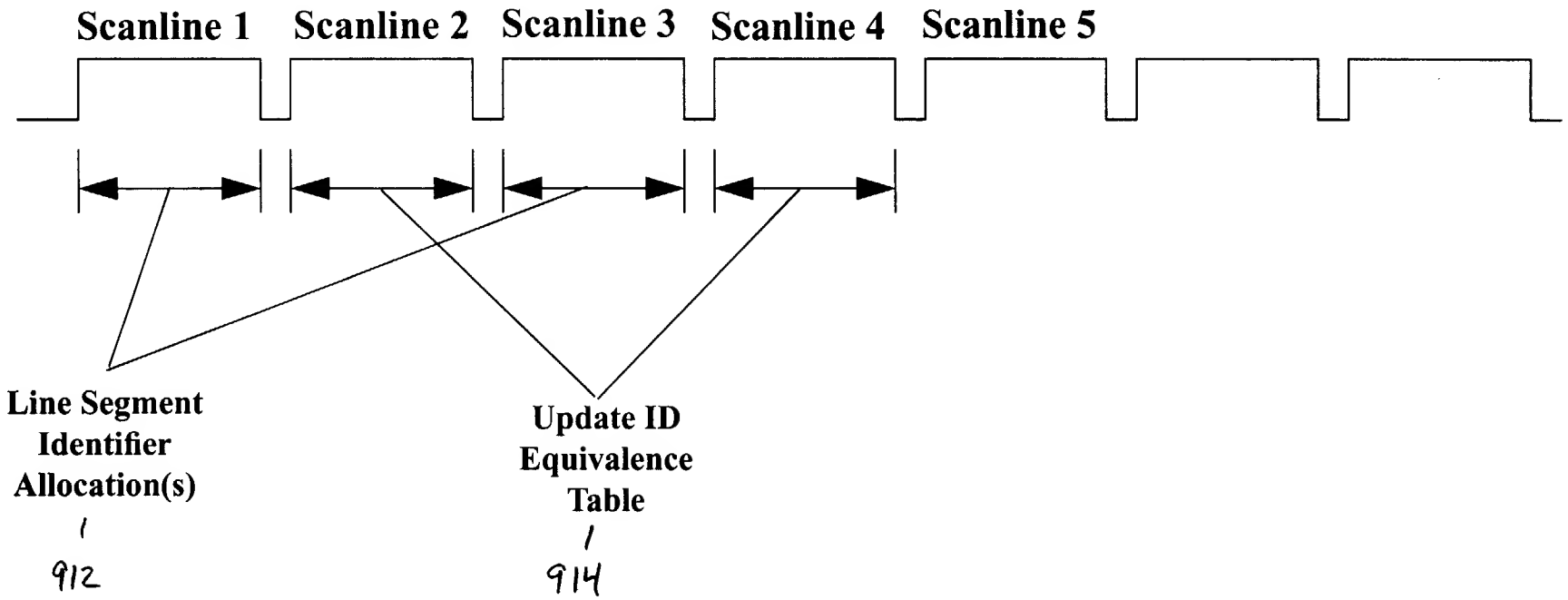


FIGURE 11B

Address	Entry
1	1
2	2
3	3
4	6
5	5
6	6
7	7
-	-

300

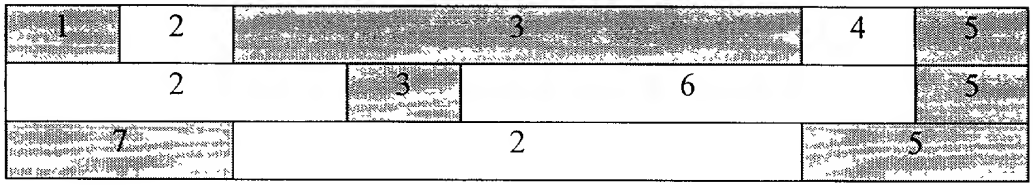
FIGURE 12

1	1	2	2	3	3	3	3	3	3	3	3	3	3	4	4	5	5
U	U	2	2	2	2	3	3	U	U	U	U	U	6	6	6	5	5
U	U	U	U	2	2	2	2	2	2	2	2	2	2	U	U	5	5

110
120
130

100

FIGURE 13A



100

FIGURE 13B

200

	RAM A Scanline 3		
	Line Segement ID	*Line Segment Tag*	*Line Segment Start Position*
202 →	7	NonWhite	1
206 →	2	White	5
210 →	5	NonWhite	15
	-	-	-
	-	-	-
	-	-	-
	-	-	-

RAM B Scanline 2			
Line Segement ID	*Line Segment Tag*	*Line Segment Start Position*	
2	White	1	← 204
3	NonWhite	7	← 208
6	White	9	← 212
5	NonWhite	17	← 216
-	-	-	
-	-	-	
-	-	-	

FIGURE 14

Address	Entry
1	1
2	2
3	3
4	6
5	5
6	2
7	7
-	-

300

FIGURE 15

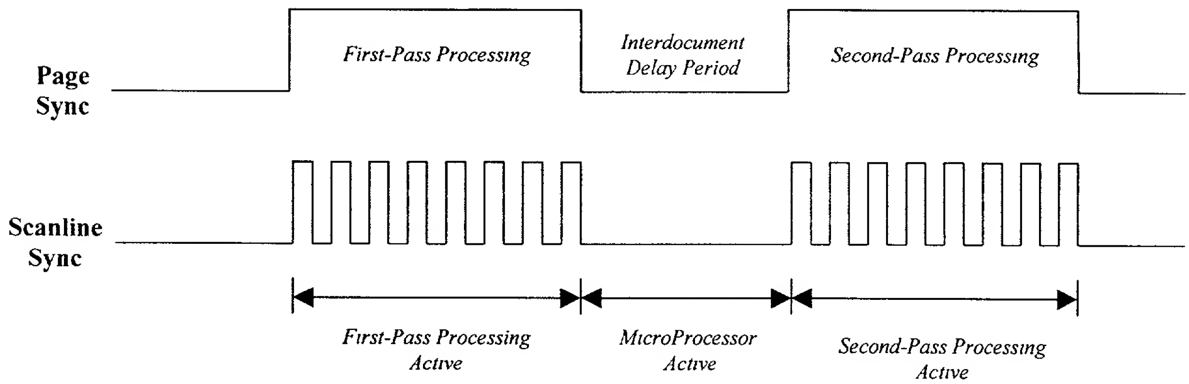


FIGURE 16

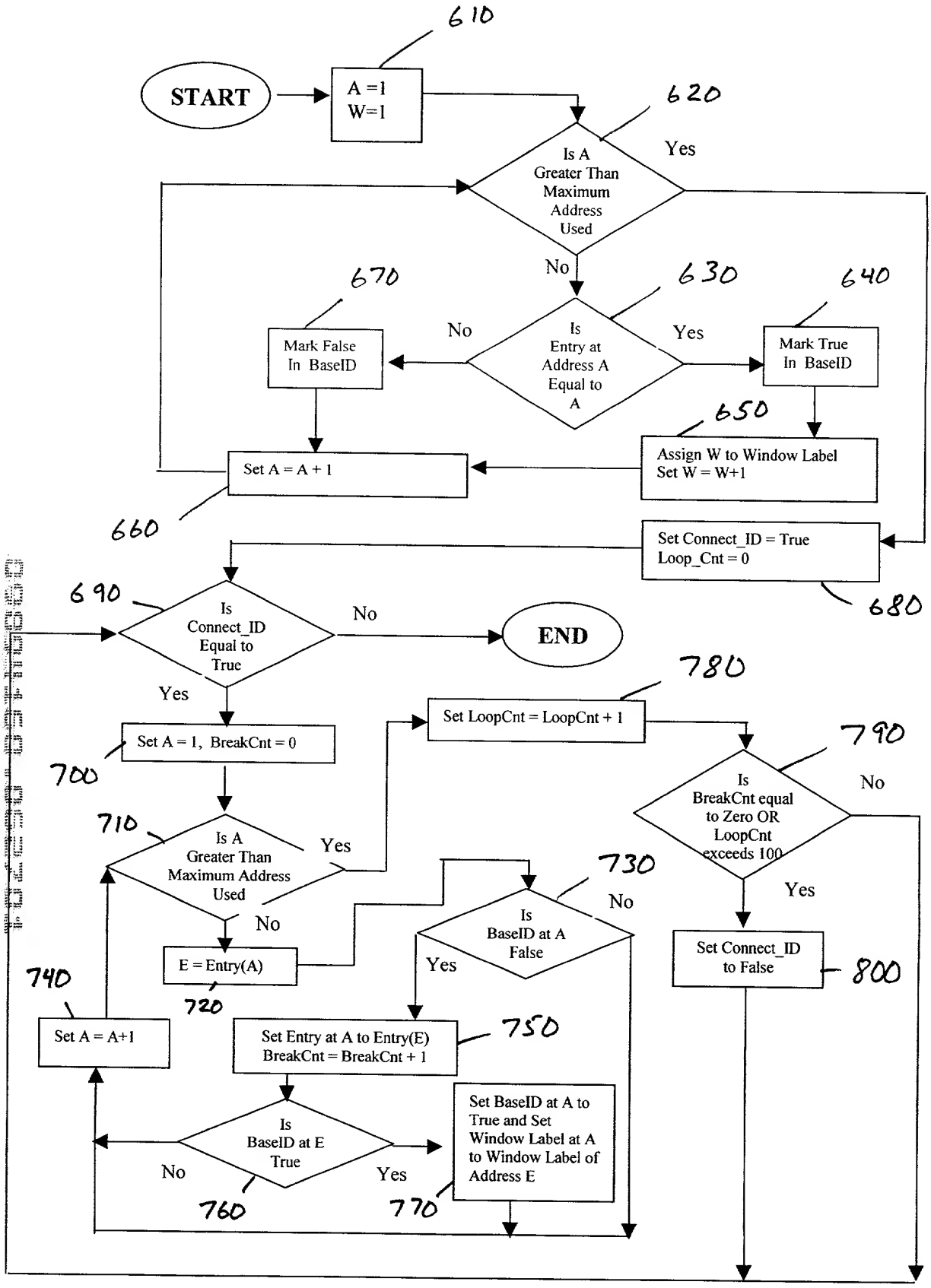
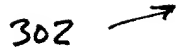

610
START
A =1
W=1
620
Is A Greater Than Maximum Address Used
Yes
No
630
Is Entry at Address A Equal to A
No
Yes
670
Mark False In BaseID
640
Mark True In BaseID
650
Assign W to Window Label
Set W = W+1
Set A = A + 1
660
Set Connect_ID = True
Loop_Cnt = 0
680
690
Is Connect_ID Equal to True
No
END
Yes
780
Set LoopCnt = LoopCnt + 1
790
Set A = 1, BreakCnt = 0
700
Is BreakCnt equal to Zero OR LoopCnt exceeds 100
No
Yes
710
Is A Greater Than Maximum Address Used
Yes
No
730
Is BaseID at A False
No
Yes
E = Entry(A)
720
Set Connect_ID to False
800
740
Set A = A+1
Set Entry at A to Entry(E)
BreakCnt = BreakCnt + 1
750
Is BaseID at E True
No
Yes
760
Set BaseID at A to True and Set Window Label at A to Window Label of Address E
770

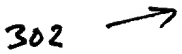
FIGURE 17

FIGURE 18A



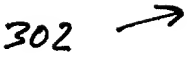
Address	307 Entry	308 BaseID	309 Window
1	1	True	W1
2	2	True	W2
3	3	True	W3
4	6	False	
5	5	True	W4
6	2	False	
7	7	True	W5
-	-	-	-

FIGURE 18B



Address	307 Entry	308 BaseID	309 Window
1	1	True	W1
2	2	True	W2
3	3	True	W3
4	2	False	
5	5	True	W4
6	2	True	W2
7	7	True	W5
-	-	-	-

FIGURE 18C



Address	307 Entry	308 BaseID	309 Window
1	1	True	W1
2	2	True	W2
3	3	True	W3
4	2	True	W2
5	5	True	W4
6	2	True	W2
7	7	True	W5
-	-	-	-

309

Address	Window Label
1	W1
2	W2
3	W3
4	W2
5	W4
6	W2
7	W5
-	-

305

FIGURE 19

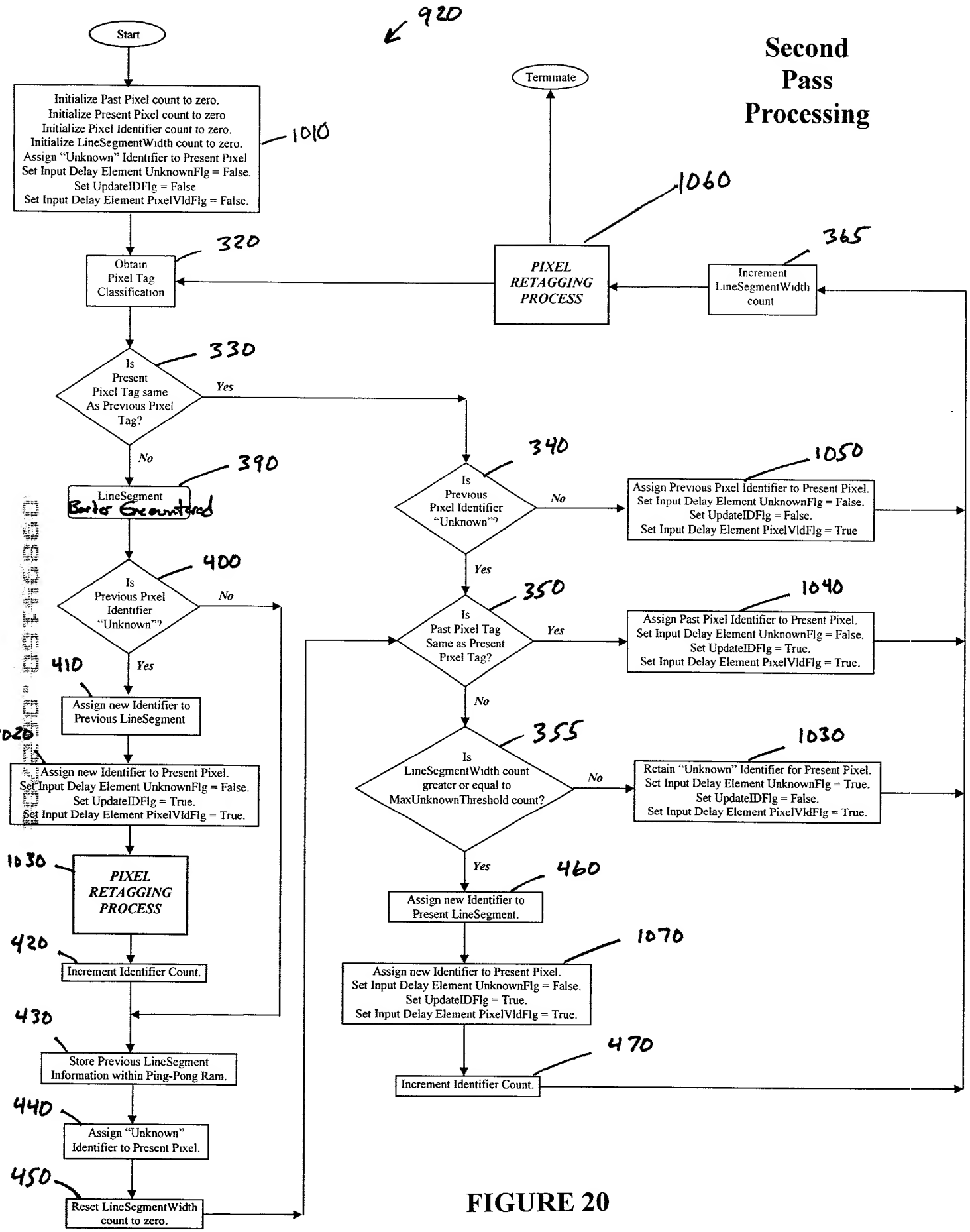

920
Second Pass Processing
Start
Terminate
Initialize Past Pixel count to zero.
Initialize Present Pixel count to zero
Initialize Pixel Identifier count to zero.
Initialize LineSegmentWidth count to zero.
Assign "Unknown" Identifier to Present Pixel
Set Input Delay Element UnknownFlg = False.
Set UpdateIDFlg = False
Set Input Delay Element PixelVldFlg = False.
1010
Obtain Pixel Tag Classification
320
PIXEL RETAGGING PROCESS
1060
Increment LineSegmentWidth count
365
Is Present Pixel Tag same As Previous Pixel Tag?
330
Yes
No
LineSegment Border Encountered
390
Is Previous Pixel Identifier "Unknown"?
400
No
Yes
Assign new Identifier to Previous LineSegment
410
1020
Assign new Identifier to Present Pixel.
Set Input Delay Element UnknownFlg = False.
Set UpdateIDFlg = True.
Set Input Delay Element PixelVldFlg = True.
1030
PIXEL RETAGGING PROCESS
Increment Identifier Count.
420
430
Store Previous LineSegment Information within Ping-Pong Ram.
Assign "Unknown" Identifier to Present Pixel.
440
Reset LineSegmentWidth count to zero.
450
Is Previous Pixel Identifier "Unknown"?
340
No
Assign Previous Pixel Identifier to Present Pixel.
Set Input Delay Element UnknownFlg = False.
Set UpdateIDFlg = False.
Set Input Delay Element PixelVldFlg = True
1050
Yes
Is Past Pixel Tag Same as Present Pixel Tag?
350
Yes
Assign Past Pixel Identifier to Present Pixel.
Set Input Delay Element UnknownFlg = False.
Set UpdateIDFlg = True.
Set Input Delay Element PixelVldFlg = True.
1040
No
Is LineSegmentWidth count greater or equal to MaxUnknownThreshold count?
355
No
Retain "Unknown" Identifier for Present Pixel.
Set Input Delay Element UnknownFlg = True.
Set UpdateIDFlg = False.
Set Input Delay Element PixelVldFlg = True.
1030
Yes
Assign new Identifier to Present LineSegment.
460
Assign new Identifier to Present Pixel.
Set Input Delay Element UnknownFlg = False.
Set UpdateIDFlg = True.
Set Input Delay Element PixelVldFlg = True.
1070
Increment Identifier Count.
470

FIGURE 20

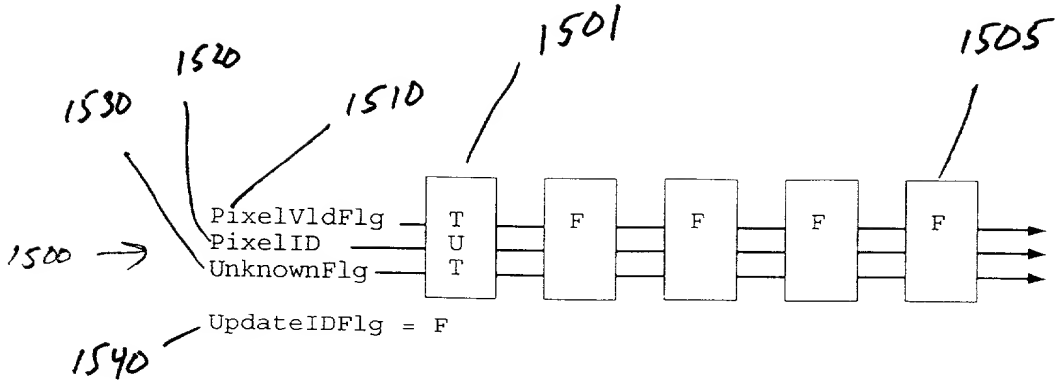


FIGURE 21A

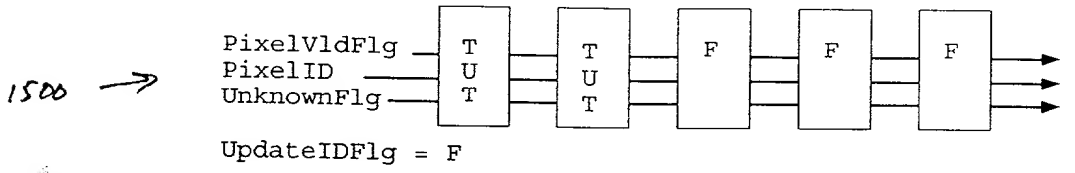


FIGURE 21B

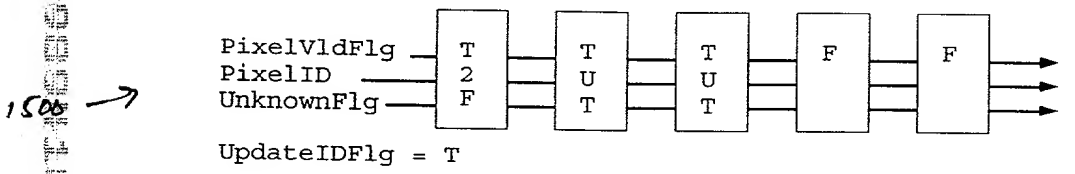


FIGURE 21C

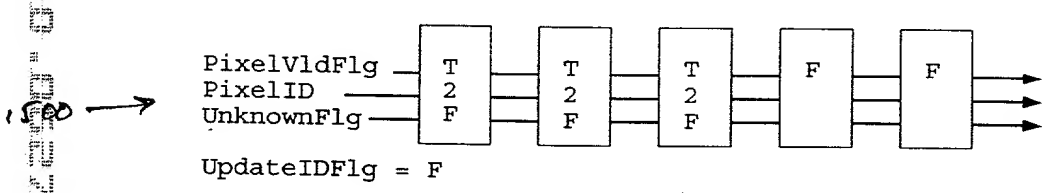


FIGURE 21D

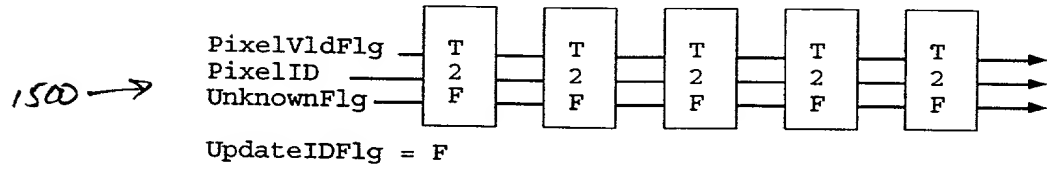


FIGURE 21E

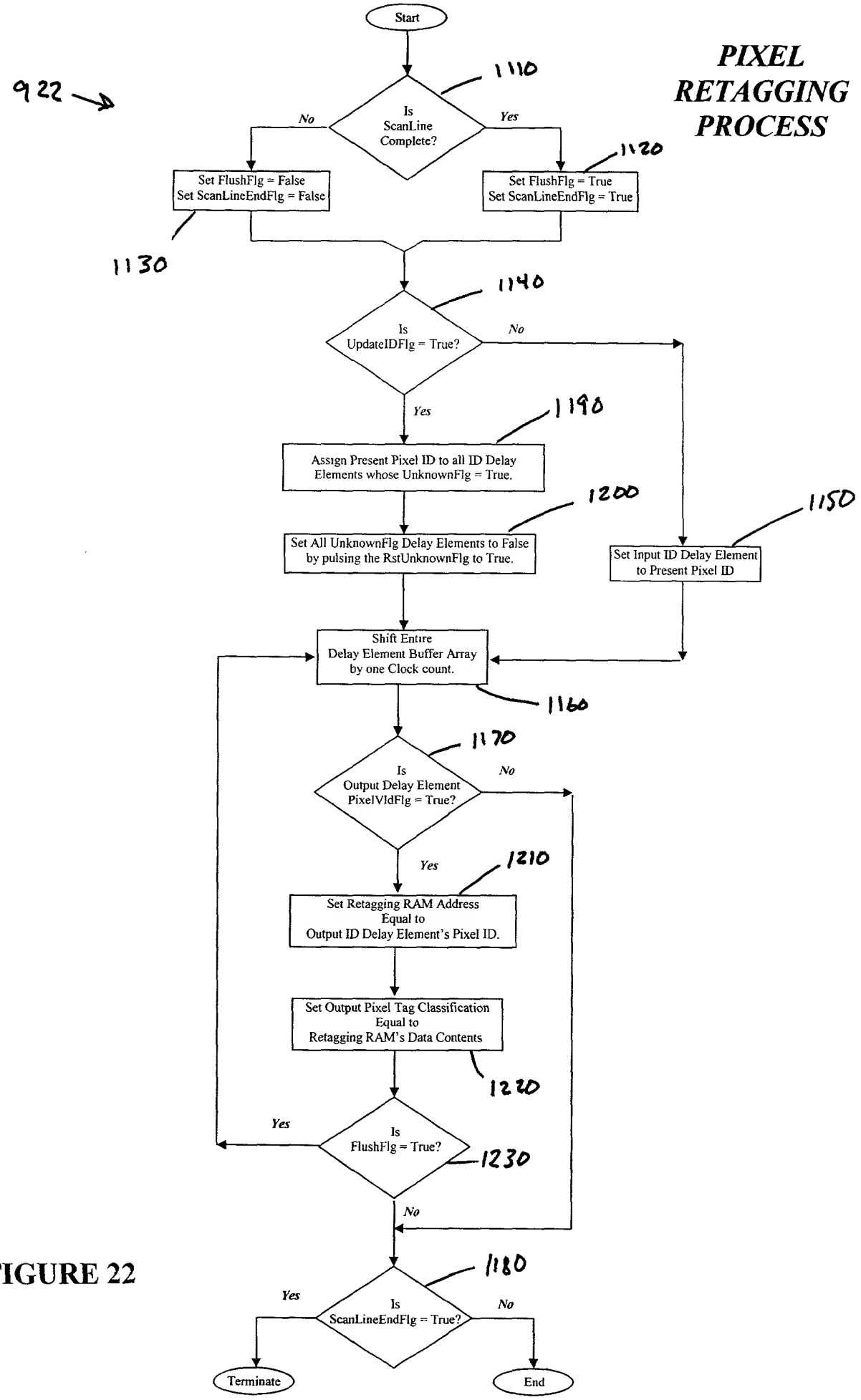
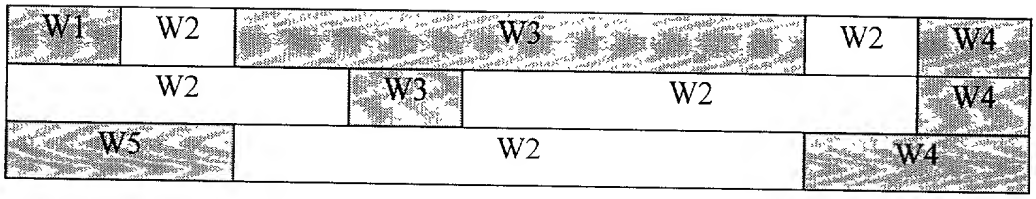

PIXEL RETAGGING PROCESS
922
Start
1110
Is ScanLine Complete?
No
Yes
1120
Set FlushFlg = False
Set ScanLineEndFlg = False
Set FlushFlg = True
Set ScanLineEndFlg = True
1130
1140
Is UpdateIDFlg = True?
No
Yes
1190
Assign Present Pixel ID to all ID Delay Elements whose UnknownFlg = True.
1200
Set All UnknownFlg Delay Elements to False by pulsing the RstUnknownFlg to True.
1150
Set Input ID Delay Element to Present Pixel ID
Shift Entire Delay Element Buffer Array by one Clock count.
1160
1170
Is Output Delay Element PixelVldFlg = True?
No
Yes
1210
Set Retagging RAM Address Equal to Output ID Delay Element's Pixel ID.
Set Output Pixel Tag Classification Equal to Retagging RAM's Data Contents
1220
Yes
Is FlushFlg = True?
1230
No
1180
Yes
Is ScanLineEndFlg = True?
No
Terminate
End

FIGURE 22



100

FIGURE 23

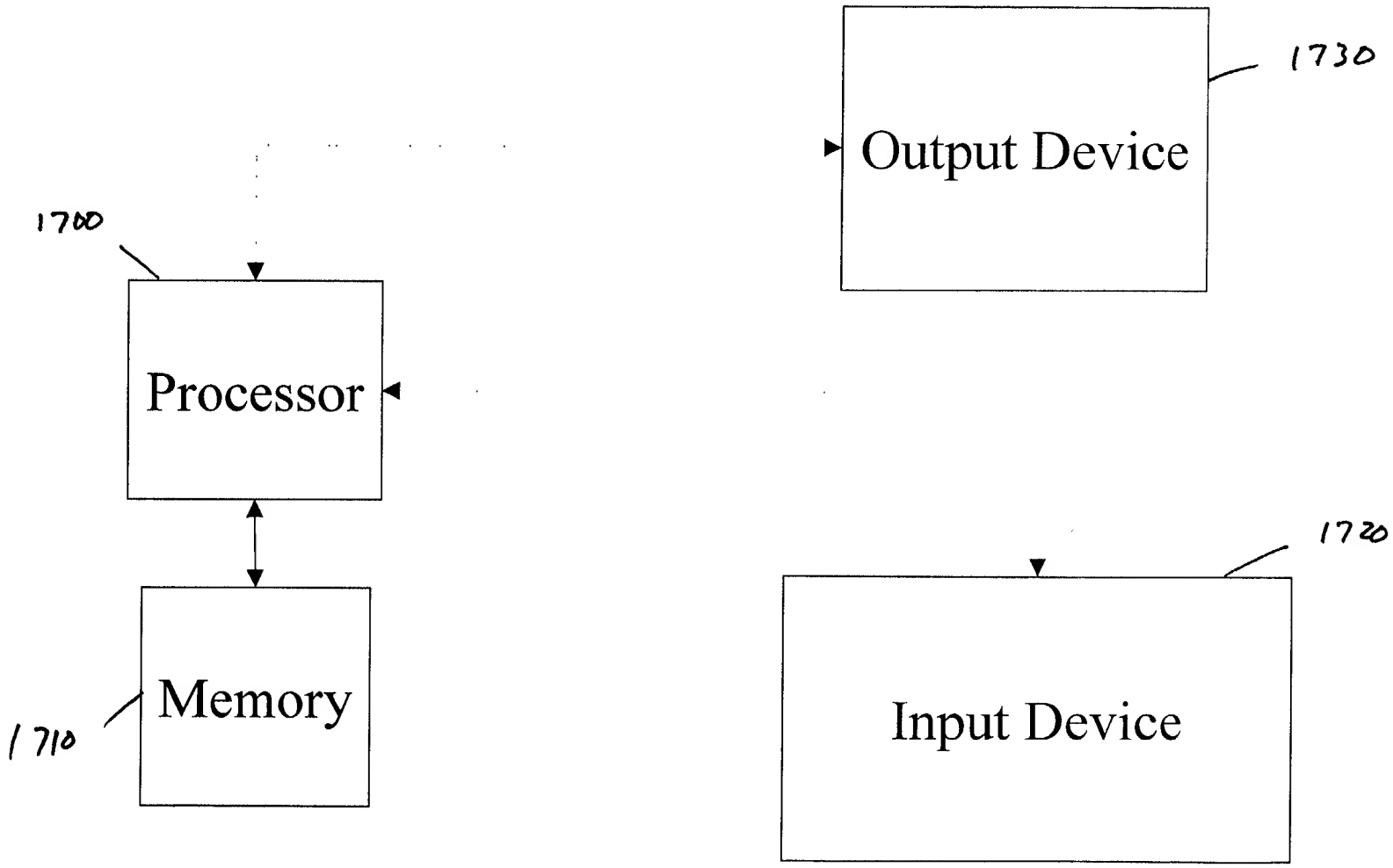

1700
Processor
Memory
1710
Output Device
1730
Input Device
1720

FIGURE 24